1-1-1981

Test 1406: Kubota L235 4WD and L235 Diesel 8-Speed

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 1406 — KUBOTA L235 4WD DIESEL
ALSO KUBOTA L235 DIESEL
8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp *(kW)*	Crank shaft speed rpm	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temperature °F *(°C)* Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg *(kPa)*
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—578 rpm)								
19.59 *(14.61)*	2600	1.382 *(5.231)*	0.495 *(0.301)*	14.17 *(2.793)*	198 *(92.0)*	62 *(16.7)*	75 *(23.9)*	29.020 *(97.996)*
Standard Power take-off Speed (540 rpm)—One Hour								
19.63 *(14.64)*	2430	1.370 *(5.186)*	0.489 *(0.298)*	14.33 *(2.823)*	197 *(91.7)*	62 *(16.7)*	75 *(23.8)*	29.000 *(97.929)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
17.06 *(12.72)*	2668	1.224 *(4.633)*	0.503 *(0.306)*	13.94 *(2.746)*	188 *(86.4)*	62 *(16.7)*	75 *(23.9)*	....
0.00 *(0.00)*	2867	0.467 *(1.768)*	....	....	182 *(83.3)*	62 *(16.7)*	75 *(23.9)*	....
8.83 *(6.58)*	2760	0.813 *(3.078)*	0.646 *(0.393)*	10.85 *(2.138)*	185 *(84.7)*	62 *(16.7)*	75 *(23.6)*	....
19.88 *(14.82)*	2601	1.421 *(5.379)*	0.501 *(0.305)*	13.99 *(2.755)*	195 *(90.3)*	63 *(17.2)*	75 *(23.6)*	....
4.48 *(3.34)*	2800	0.638 *(2.415)*	0.997 *(0.607)*	7.03 *(1.383)*	183 *(83.9)*	63 *(16.9)*	75 *(23.6)*	....
12.99 *(9.69)*	2707	1.015 *(3.842)*	0.547 *(0.333)*	12.81 *(2.522)*	188 *(86.4)*	63 *(17.2)*	75 *(23.9)*	....
Av 10.54	**2734**	**0.930**	**0.618**	**11.34**	**187**	**62**	**75**	**28.900**
Av (7.86)		***(3.520)***	***(0.376)***	***(2.233)***	***(85.8)***	***(16.9)***	***(23.8)***	***(97.591)***

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power—Two Hours 6th Gear											
15.36 *(11.45)*	1230 *(5.47)*	4.68 *(7.54)*	2600	7.07	1.356 *(5.131)*	0.618 *(0.376)*	11.33 *(2.232)*	184 *(84.4)*	70 *(20.8)*	76 *(24.4)*	28.785 *(97.203)*
75% of Pull at Maximum Power—Ten Hours 6th Gear											
12.74 *(9.50)*	967 *(4.30)*	4.94 *(7.95)*	2697	5.50	1.174 *(4.443)*	0.646 *(0.393)*	10.85 *(2.138)*	179 *(81.7)*	57 *(14.0)*	68 *(19.9)*	28.843 *(97.398)*
50% of Pull at Maximum Power—Two Hours 6th Gear											
8.73 *(6.51)*	641 *(2.85)*	5.10 *(8.21)*	2751	4.31	0.945 *(3.579)*	0.759 *(0.462)*	9.23 *(1.818)*	176 *(80.0)*	51 *(10.6)*	61 *(16.1)*	29.105 *(98.283)*
50% of Pull at Reduced Engine Speed—Two Hours 7th Gear											
8.74 *(6.52)*	639 *(2.84)*	5.13 *(8.26)*	1624	3.99	0.767 *(2.903)*	0.615 *(0.374)*	11.40 *(2.245)*	176 *(80.0)*	57 *(13.9)*	70 *(21.1)*	29.035 *(98.047)*
MAXIMUM POWER IN SELECTED GEARS											
15.41 *(11.49)*	2440 *(10.85)*	2.37 *(3.81)*	2614	14.52	4th Gear			183 *(83.6)*	61 *(16.1)*	75 *(23.9)*	28.960 *(97.794)*
15.48 *(11.54)*	2004 *(8.91)*	2.90 *(4.66)*	2597	11.69	5th Gear			182 *(83.3)*	67 *(19.4)*	71 *(21.7)*	28.810 *(97.287)*
16.05 *(11.97)*	1285 *(5.72)*	4.68 *(7.54)*	2598	7.05	6th Gear			181 *(82.8)*	65 *(18.3)*	66 *(18.9)*	28.820 *(97.321)*
14.88 *(11.10)*	677 *(3.01)*	8.24 *(13.27)*	2599	3.69	7th Gear			181 *(82.8)*	65 *(18.3)*	69 *(20.6)*	28.820 *(97.321)*

LUGGING ABILITY IN 6th GEAR

Crankshaft Speed rpm	2598	2342	2067	1832	1555	1301
Pull—lbs *(kN)*	1285 *(5.72)*	1424 *(6.33)*	1543 *(6.86)*	1600 *(7.12)*	1608 *(7.15)*	1591 *(7.08)*
Increase in Pull %	0	11	20	25	25	24
Power—Hp *(kW)*	16.05 *(11.97)*	15.90 *(11.86)*	15.10 *(11.26)*	13.81 *(10.30)*	11.78 *(8.78)*	9.76 *(7.28)*
Speed—Mph *(km/h)*	4.68 *(7.54)*	4.19 *(6.74)*	3.67 *(5.91)*	3.24 *(5.21)*	2.75 *(4.42)*	2.30 *(3.70)*
Slip %	7.05	7.78	8.45	8.79	8.95	8.87

Department of Agricultural Engineering

Dates of Test: September 17-30, 1981

Manufacturer: KUBOTA LTD, 2-47 Shikitsu-higashi, 1-chome, Naniwa-ku, Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8417 **Fuel weight** 7.008 lbs/gal *(0.840 kg/l)* **Oil SAE** 20-20W **API service classification** SB/SE-CA/CD **To motor** 1.231 gal *(4.659 l)* **Drained from motor** 1.135 gal *(4.295 l)* **Transmission and hydraulic lubricant** SAE 20 hydraulic transmission fluid **Front axle lubricant** SAE 80 **Total time engine was operated** 42.5 hours.

ENGINE: Make Kubota Diesel **Type** three cylinder vertical **Serial No.** D1102-A-01439 **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 3.0″ × 3.23″ *(76 mm × 82 mm)* **Compression ratio** 21 to 1 **Displacement** 68 cu in *(1115 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow paper cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** L235DT-10194 **Tread width** rear 40.0″ *(1015 mm)* to 44.7″ *(1135 mm)* front 39.4″ *(1000 mm)* **Wheel base** 64.6″ *(1640 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 31.1″ *(790 mm)* Vertical distance above roadway 29.3″ *(745 mm)* Horizontal distance from center of rear wheel tread 0″ *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 0.8 *(1.3)* second 1.3 *(2.1)* third 2.2 *(3.5)* fourth 2.9 *(4.7)* fifth 3.5 *(5.6)* sixth 5.3 *(8.5)* seventh 9.0 *(14.5)* eighth 12.1 *(19.4)* reverse 0.8 *(1.2)*, 1.2 *(1.8)*, 1.9 *(3.1)*, 2.6 *(4.2)*, 3.1 *(5.0)*, 4.8 *(7.7)*, 8.1 *(13.0)* **Clutch** single dry disc operated by foot pedal **Brakes** wet disc operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 106″ *(2.7 m)* left 106″ *(2.7 m)* (on concrete surface without brake) right 122″ *(3.1 m)* left 122″ *(3.1 m)* **Turning space diameter** (on concrete surface with brake applied) right 217″ *(5.5 m)* left 217″ *(5.5 m)* (on concrete surface without brake) right 244″ *(6.2 m)* left 244″ *(6.2 m)* **Power take-off** 540 rpm at 2430 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump inlet was maintained at 143°F *(61.4°C)*. Four gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	91.0	90.0
75% of Pull at Maximum Power—Ten Hours		90.5
50% of Pull at Maximum Power—Two Hours		89.0
50% of Pull at Reduced Engine Speed—Two Hours		84.0
Bystander in 8th gear		77.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

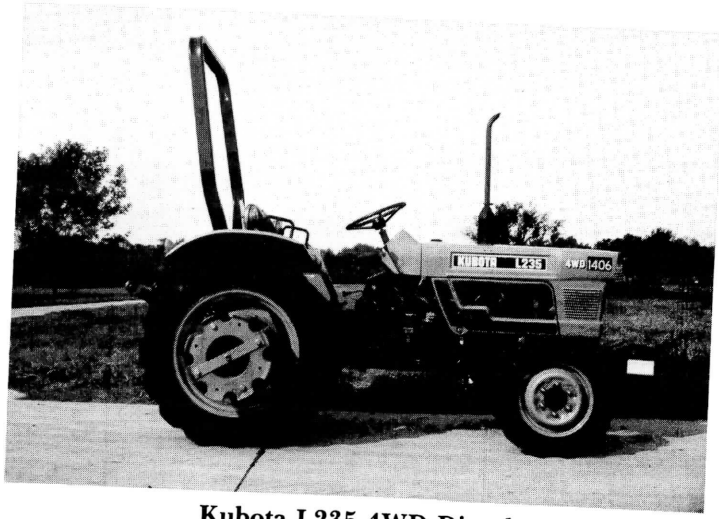
Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power—Two Hours 6th Gear											
15.28 *(11.39)*	1180 *(5.25)*	4.85 *(7.81)*	2598	5.19	1.391 *(5.267)*	0.638 *(0.388)*	10.98 *(2.163)*	183 *(83.9)*	70 *(21.1)*	77 *(24.7)*	28.750 *(97.084)*
MAXIMUM POWER IN SELECTED GEARS											
14.92 *(11.13)*	3065 *(13.63)*	1.83 *(2.94)*	2666	14.97	3rd Gear			178 *(81.1)*	45 *(7.2)*	50 *(10.0)*	29.120 *(98.334)*
16.02 *(11.95)*	1240 *(5.51)*	4.85 *(7.80)*	2597	5.26	6th Gear			181 *(82.8)*	65 *(18.3)*	68 *(20.0)*	28.820 *(97.321)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 9.5-24; 4; 14 *(95)*	Two 9.5-24; 4; 14 *(95)*
Ballast	—Liquid (each)	180 lb *(82 kg)*	None
	—Cast Iron (each)	338 lb *(153 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 6-14; 4; 28 *(195)*	Two 6-14; 4; 28 *(195)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	122 lb *(55 kg)*	None
Height of Drawbar		15 in *(380 mm)*	15 in *(380 mm)*
Static Weight with Operator—Rear		2445 lb *(1109 kg)*	1410 lb *(640 kg)*
Front		1270 lb *(576 kg)*	1025 lb *(465 kg)*
Total		3715 lb *(1685 kg)*	2435 lb *(1105 kg)*

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1406.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Kubota L235 4WD Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director